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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/718,007

Filing Date: November 20, 2003

Appellant(s): JAFFEE ET AL.

Robert D. Touslee
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 3/4/2010 appealing from the Office action mailed 8/13/2009.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:
51-64, 71-84, 91-94 and 99.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

US 5,772,846	JAFFEE	6-1998
US 5,661,213	ARKENS et al.	8-1997

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 112

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. Claims 82-84, 91-94 and 99 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim limitation of "...comprising a blend of fibers suitable for use as the scored and folded vertical webs spanning between an exposed mat and a backer mat in a compressible ceiling tile as described in published U.S. Patent Application No. 20020020142 filed April 23, 2001..." is improper. Claims may not incorporate or incorporate by reference another publication, but instead should clearly spell out the intended structure, composition, etc. of the invention. For purposes of examination the aforementioned claim limitation has been interpreted as an intended use limitation as it fails to provide any quantifiable guidance as to how the claimed article differs from other fibrous nonwoven mats in the same field of endeavor.

Claim Rejections - 35 USC § 103

2. Claims 51-64, 71-84, 91-94 and 99 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jaffee (US 5,772,846) in view of Arkens et al. (US 5,661,213).

a. Jaffee discloses a nonwoven glass fiber mat comprising a major portion of glass fibers and a minor portion of polymeric fibers with crosslinkable binder (abstract). The ***mat may be any weight*** (emphasis added) but its preferred weight is from about 1.8 to about 2.2 pounds per 100 square feet for use as a facer (col. 3, lines 6-18). The invention of Jaffee is not limited to its use as a facer, but may also be made into other forms such as an accordion-shaped filter (col. 2, lines 20-28). Examiner takes the position that since the invention of Jaffee may be of any basis weight and the fact that the reference also discloses that the preferred basis weight is ***about 2.2 pounds per 100 square feet*** (emphasis added) it would have been obvious to one of ordinary skill in the art to have modified the applied nonwoven glass fiber mat to have a basis weight of about 2.3-2.6 pounds per 100 square feet based upon the desired properties of the final product and its intended use (i.e. filter, facer, etc). Jaffee fails to teach a preferred thickness for the nonwoven glass fiber mat, but does provide a singular example that has a thickness of 31 mils (Example 2). Mat thickness, like basis weight, is chosen depending on the desired properties of the final product and said product's intended use. Therefore, it also would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the invention of Jaffee with a mat thickness of between 38 and 48 mils. The applied invention can also be pleated or thermoformed to produce a variety of composites

and laminates (abstract) and as such is suitable for use as a scored and folded vertical web as now claimed.

b. Jaffee's nonwoven mat comprises glass fibers with diameters of between about 9 and 20 microns, preferably 16 microns, and lengths of around one inch (col. 3, lines 8-10, 34-61). The nonwoven mat further comprises polyester fibers of 1.5 denier with lengths as low as 0.25 inches (Example 2) and acrylic binder. The binder may be present in the nonwoven mat at up to 35 weight percent of said mat (abstract) and Example 2 provides the specific value of 20 weight percent, which meets the binder level of claim 51 and Example 4 recites binder levels of 25 weight percent.

c. Example 2 of Jaffee uses a fiber blend comprising 85 weight percent glass fiber and 15 weight percent polyester fiber. The relative amounts of glass and polyester fibers is a result-effective variable affecting its strength and the degree of skin irritation caused to the invention's handlers (col. 6 lines 6-39). Consequently, absent a clear and convincing showing of unexpected results demonstrating the criticality of the claimed ratio, it would have been obvious to one of ordinary skill in the art to optimize this result-effective variable by routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977).

d. Example 2 provides for a stiffness of 45 and the instantly claimed invention recites a Taber stiffness of 50. Alan Jaffee, who is also an inventor in the applied patent, has attested that while not explicitly stated, the applied reference's stiffness values are in fact Taber Stiffness values with units of gram centimeters. The applied reference teaches that the stiffness value of 45 is higher than desired for a facer, however one of ordinary

skill in the at the time of the invention would have found it obvious to have modified the applied nonwoven glass fiber mat to have a Taber stiffness of at least about 50 grams centimeters based upon the desired properties of the final product and its intended use (i.e. other than a facer). Jaffee fails to use a binder that is at least partially cured and before drying and curing comprises a homopolymer or a copolymer of polyacrylic acid and a polyol.

e. Arkens et al. relates to a formaldehyde-free curable aqueous composition containing a polyacid, a polyol and a phosphorus-containing accelerator. The composition may be used as a binder for heat resistant nonwoven fabrics such as fabrics composed of fiberglass. (Abstract) Arkens et al. teach nonwoven fabrics that contain heat-resistant fibers such as for example, aramid fibers, certain polyester fibers, glass fibers, among others. The use of the term "heat-resistant fibers" is meant (in Arkens et al.) to mean fibers which are substantially unaffected by exposure to temperatures above 125°C (col. 8, lines 23-31). The reference teaches that the polyacid may be a compound with a molecular weight of less than about 1000, bearing at least two carboxylic acid groups and teaches that it may be a polymeric acid that is preferably an addition polymer formed from at least one ethylenically unsaturated monomer (such as methacrylic acid, acrylic acid, among others) (col. 3, line 45 through col. 4, lines 1-5). The reference also teaches that the polyol may be triethanolamine (col. 6, lines 1-6). The formaldehyde-free curable aqueous composition may also contain emulsifiers, pigments, fillers, colorants, wetting agents (*equated to hydrophilic material*), among other components (col. 6, lines

52-57). The reference teaches a nonwoven substrate made from a fiberglass fiber at 1.25 inches in length with a binder add-on of 28%.

f. Since both references are directed to glass fiber nonwoven mats comprising heat-resistant fibers (aramid, polyester, glass fibers, etc.), the purpose disclosed by Arkens et al. would have been recognized in the pertinent art of Jaffee.

g. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the mats of Jaffee and provide them with the binder composition of Arkens et al. with the motivation of being able to carry out the drying and curing functions in two or more distinct steps, if desired (col. 8, lines 42-60). This process is referred to as “B-staging”. The limitation of “a binder that is at least partially cured and consists essentially of, before drying and curing, a homopolymer or a copolymer of polyacrylic acid and a polyol” is met by the composition of Arkens et al. as the claimed process is the “B-staging” of Arkens et al.

h. Although the prior art of Jaffee in combination with Arkens et al. does not explicitly teach the claimed ratio of wet tensile strength to dry tensile strength or air permeability it is reasonable to presume that this property is inherent to a mat from the combination of Jaffee and Arkens. Support for said presumption is found in the use of like materials (i.e. nonwoven mat formed in the same manner that includes glass fibers and polyester fibers, with a binder that prior to curing includes a polyacid and a polyol similar to the one claimed herein). The burden is upon Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed property of wet tensile strength/dry tensile strength or air permeability would obviously have been present one

the product form the combination of Jaffee and Arkens is provided. Reliance upon inherency is not improper even though rejection is based on Section 103 instead of Section 102. *In re Skoner, et al.* (CCPA) 186 USPQ 80.

i. With regards to the claimed property of passing the NFPA Method #701 Flammability Test, it is the Examiner's position that such property will also be inherent to the structure from the combination of Jaffee and Arkens et al. for the same reasons stated in the paragraph above.

(10) Response to Arguments

1. Appellant argues that claims 82-84, 91-94 and 99 are not indefinite because the claims "particularly point out and distinctly claim" the instant invention and are in fact more distinctly claimed than those dependent from claim 51, which describe a mat that may be used in a compressible ceiling tile. The rejected claims also recite a mat, but one that may be used as a compressible ceiling tile as disclosed in a pre-grant publication. As Examiner has previously stated, claims are to be complete in themselves. Incorporation by reference to a specific document "is permitted only in exceptional circumstances where there is no practical way to define the invention in words and where it is more concise to incorporate by reference than duplicating a separate document into the claim. Incorporation by reference is a necessity doctrine, not for Applicant's convenience." *Ex parte Fressola*, 27 USPQ2d 1608, 1609 (Bd. Pat. App. & Inter. 1993) (citations omitted).

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2. Appellant argues that since no standard test exists for the type of “spring back” properties needed for this new type of fibrous mat for this relatively new application and products, adding in a concise manner by referring to a readily available public document describing the type of environment the “spring back” properties or characteristics of the mats, dividers are working with and against “adds” to the understanding to the understanding one of ordinary skill in fibrous mats. Examiner has not rejected claim 51 as being indefinite because it does provide adequate support and description as to the type of “spring back” properties required for this new type of fibrous mat and its subsequent application and products. Appellant has relied upon the PGPub document limitation to provide further guidance as to the intended use of the fibrous mat resulting in a qualitative assessment of its performance. Appellant’s reliance upon a separate document in a claim is unnecessary and makes the claim indefinite, because there is a practical way to define the invention in words as demonstrated in instant claim 51.

3. Appellant argues that Jaffee discloses the creation of mats with improved flexibility compared to prior art mats, therefore Jaffee teaches away from the claimed invention, which has higher stiffness and a spring back characteristic. The stiffness of a fiberglass mat is based upon a number of variables including the basis weight and thickness of the mat as well as its composition. Examiner has already demonstrated that the fibers of the fiberglass mat of Jaffee read on the fibers of the claim invention, but the preferred basis weight of the applied mat approaches, but does not significantly overlap with the claimed mat. One would reasonably conclude that when comparing two compositionally similar mats with differing basis weights, the lighter mat would be more flexible than the heavier mat. Therefore, if one of ordinary skill in the art made the Jaffee mat with a heavier basis weight it would become stiffer, than the mats of

Jaffee that fall within the preferred thickness range. An easy way to increase the basis weight of a fibrous mat is to make it thicker. Therefore, by increasing the basis weight of the fibrous mat of Jaffee you in turn are also increasing its thickness. The reasoning behind modifying the fibrous mat of Jaffee is based upon the fact that the reference teaches that the mat may be of any basis weight, therefore it would have been obvious to one of ordinary skill in the art to have modified the applied nonwoven glass fiber mat to have a basis weight of about 2.3-2.6 pounds per 100 square feet based upon the desired properties of the final product and its intended use (i.e. filter, facer, etc).

4. Appellant argues there is no reasonable suggestion that Example 2 of Jaffee would be suitable for scoring and folding, or how doing so would affect its tensile strength. Example 2 provides for a stiffness of 45 and the instantly claimed invention recites a Taber stiffness of 50. Alan Jaffee, who is also an inventor in the applied patent, has attested that while not explicitly stated the applied reference's stiffness values are in fact Taber Stiffness values with units of gram centimeters. The applied reference teaches that the stiffness value of 45 is higher than desired for a facer, however one of ordinary skill in the at the time of the invention would have found it obvious to have modified the applied nonwoven glass fiber mat of Jaffee to have a Taber stiffness of at least about 50 grams centimeters based upon the desired properties of the final product and its intended use (i.e. other than a facer).

5. Appellant argues that the inventor has submitted that Examples 2 and 3 of Jaffee were not suitable for use in compressible ceiling tiles because of insufficient stiffness and fire resistance and toxicity. Examiner has not relied upon Examples 2 and 3 of Jaffee to reject the instant claims and has not applied Jaffe in an anticipatory rejection. Examiner has relied upon the basic

fibrous mat teachings of Jaffee and replaced its binder with that of Arkens et al. to arrive at the claimed invention. The combination of the binder and fibers as set forth in the rejection would yield an article with the claimed properties for use in the claimed manner.

6. Appellant argues that Jaffee teaches that part of his objective is a mat containing a major portion of glass fibers that can be pleated and thermoformed to a desired shape and then cooled to retain the formed shape and Appellant feels this process is "B-staging". Appellant feels that this process teaches away from the claimed invention because thermoforming is very different from scoring and folding and yields completely different techniques, because a thermoformed mat does not spring back in the claimed manner. Appellant's claims are directed to a mat possessing properties after scoring and folding having the *ability* (emphasis added) to spring back to the original shape. In modifying Jaffee with the resin of Arkens et al., Examiner has made a mat that may dried, then manipulated in any of a number of ways including scoring and folding, and then at a later time cured to lock in the desired shape. The applied combination mat will possess the ability to spring back to its original shape and orientation prior to its being cured. Examiner has not attempted to equate thermoforming to scoring and folding, rather he is pointing to the fact that being able to cure the fibrous mat following post-production manipulation is desirable and the motivation to replace the resin of Jaffee with that of Arkens et al. Furthermore, Examiner would like to point out that the mat of Jaffee is pleated, therefore, it is foldable prior to thermoforming.

7. Appellant argues that there is no disclosure in Jaffee or Arkens et al. that would suggest to one of ordinary skill in the art that any of the mats disclosed in these references should or could be scored and folded to make a mat having excellent tensile strength and spring back

properties of the claimed mats. Appellant continues on to say that there is no disclosure in either of these references that would lead one of ordinary skill in the art to believe that modifying the composition, basis weight and thickness of any of the disclosed mats to that of the claimed invention would produce mats having excellent tensile strength and spring back after scoring and folding. The ability of the claimed invention to possess excellent tensile strength and spring back after scoring and folding is directly attributable to the make of the fibrous mat (fibers and resin) as well as the formed mat's size and structure (basis weight and thickness). These components taken together yield the claimed fibrous mat and its resultant inherent properties. Jaffee provides a fibrous mat comprising fibers of the claimed composition, size and quantity. Arkens et al. provide for the claimed resin composition for the fibrous mat. Therefore, the two references taken in conjunction arrive at a fibrous mat that is compositionally the same as that of the claimed invention. Modification of the applied references to arrive at the claimed basis weight and thickness of the fibrous mat would yield a fibrous mat that possesses both the same composition and structure of that which is claimed. The claimed inherent properties, excellent tensile strength and spring back, would necessarily be present because the components that provide said inherent properties (composition and structure) have been met by the rejection.

8. Appellant argues that more than 100 trials taking more than 54 days is evidence of non-obviousness of the claimed invention. The applied Jaffee reference clearly outlines the fact that glass fiber mats may be made into varying sizes and compositions for purposes as different as gypsum facers and accordion shaped filter element (col. 2, lines 16-29). Therefore, one of ordinary skill in the art would recognize that a reasonable amount of experimentation would be required to arrive at articles that require different physical properties, thereby necessitating

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differing compositions and structures. Each of these differing compositions and structures would require their own set of tests to arrive at a composition and structure that suits a particular function.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Matthew Matzek

/Matthew D Matzek/

Examiner, Art Unit 1786

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